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Experiment Station. The Macmillan Company. Cloth, 8vo. xv + 536 pp., index. \$2.25 net.

During the last decade, the science of household bacteriology has made very wonderful progress as an independent study and as a result we feel to-day a very clear and constant demand for suitable text-books and manuals for use in this new but important field of bacteriology.

The book as presented by the Buchanans consists of a neatly bound volume of 536 pages clearly but simply written. The text is profusely illustrated by original drawings and photographs which add greatly to the attractiveness and usefulness of the book.

"The volume has been divided somewhat arbitrarily into five sections," by the authors. The first three chapters are of an introductory nature and cover the general topic of bacteriological technique. In Section II. more emphasis ought to have been laid on standard methods for the preparation of culture media and more space should have been allotted to the discussion of the cultural characteristics of the yeasts and molds.

Section IV. is given over to fermentation or zymotechnique, as it is called by the authors, and is the best chapter of the book. This section consists of 114 pages and covers the subject of enzymes and their fermentative activities and is characterized by its clear descriptions and explanations of this most complex but interesting subject. The book closes with a section entitled "Microorganisms and Health," consisting of a general discussion of the theory of disease followed by a detailed description of the pathogenic bacteria yeasts and molds. The chapters of this section dealing with the examination of air, water and food might have been elaborated upon and formed into a new section. The volume is supplemented by an appendix containing a key (37 pages) to the families and genera of the common molds which is fully illustrated and must be very useful as a ready means of identifying the common molds of the laboratory.

The main criticism of this volume lies in the title "Household Bacteriology." It is inadequate

for two reasons. The book in its present form is too broad to be called a bacteriology and should have been called a microbiology or by some other suitable title. The authors have realized this narrowness of title by using the term microorganism in the heading of every section. Then again this volume is merely a general bacteriology whose title has been extended to cover the field of household bacteriology. With the exception of the poor choice of title, the volume is well written and well adapted for courses in general bacteriology.

WILLIAM W. BROWNE

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Elements of Water Bacteriology. By Professor S. C. PRESCOTT and Professor C. E. A. WINSLOW.

Prescott and Winslow's "Water Bacteriology" is the best known book on the subject in America, and it may also be added that it is the best book. This third edition has been entirely rewritten and very much enlarged. The authors state that the revision has been made necessary by the newer ideas on the effect of temperature upon the viability of bacteria in water, the new methods of isolation of specific pathogenic organisms, and the recent recommendations of the Committee on Standard Methods of Water Analysis of the American Public Health Association. The authors do not approve of the recent recommendation of this committee to replace the 20 deg. gelatine count by the 37 deg. agar count. This recommendation has received unfavorable comment at the hands of many American bacteriologists, and has resulted in producing an unfortunate condition of confusion. The authors hold that both the 20 deg. gelatine count and the 37 deg. agar count should be used, and this idea was approved by the Laboratory Section of the American Public Health Association in 1912.

The authors also take issue with the Standard Methods Committee on the subject of the test for *B. coli*. The discussion is too long to be referred to in this review, but it is one of great interest and importance to every bacteriologist and sanitary engineer, and should be

carefully studied. In general, it may be said that the authors hold that fermentation of lactose broth, or lactose bile, may be regarded as a sufficient working test for organisms of intestinal origin. If this idea is carried out it will greatly simplify the routine procedure in the examination of water. The work of the English bacteriologists is discussed at length, particularly that of Houston in London and Clemesha in India.

A new chapter has been added to the book on the bacteriological examination of shell-fish, and it includes the recommendation of the Committee on Standard Methods for the Bacteriological Examination of Shell-fish of the American Public Health Association. The appendix describes the preparation of culture media, and contains an excellent list of references.

GEORGE C. WHIPPLE

SPECIAL ARTICLES

THE CHESTNUT BARK DISEASE ON CHESTNUT FRUITS¹

SINCE the chestnut bark disease has been so widely studied by the many investigators who have given attention to it within the last few years, numerous articles have been published calling attention to the various ways by which the infection is known definitely to be spread from place to place, as well as of some methods that have been assumed to contribute to its spread. The most prominent of those thus far mentioned have been due to the transportation of spores through the agencies of wind, rain, insects, birds, rodents, man, etc., or to the transportation of various fruiting and vegetative parts, or fragments of the fungus, by means of infected cordwood, poles, ties, bark, grafting scions, nursery stock, etc. So far as the writer knows, no one has called special attention to the danger of the disease being transmitted by means of infected chestnut fruits, yet infected nuts at times undoubtedly are capable of spreading the disease, as will be realized from what follows, which describes one case which has come to our notice.

¹ Published by permission of the Secretary of Agriculture.

In September, 1912, Professor R. Kent Beattie, Dr. T. C. Merrill and the writer found numerous nuts and burs, which had been lying on the ground in Lancaster county, Pennsylvania, for several months, upon which were many reddish brown pustules, in a buff or yellowish mycelium. These looked very much like the pycnidial pustules and mycelium of *Endothia parasitica*. Portions of the diseased fruits were inoculated by the writer into the bark of a grafted Paragon chestnut tree, while for comparison some inoculations were made at the same time from a typical canker. The infected nuts were collected on September 4, 1912, and the infected bark was collected and the inoculations made on the following day. The records and results of these inoculations are given below.

The limb selected for inoculation was healthy-looking, apparently free from disease, from one to two inches in diameter, but on a tree that was already diseased on some other limbs. Eighteen cuts through the bark were made with a sterile knife-blade, except as noted below in the case of two cuts. For convenience in referring to these cuts they have been numbered consecutively from 1 to 18. Nos. 1, 2, 5, 6, 7, 8, 11, 12, 13, 14, 17 and 18 were checks, all uninoculated in the ordinary sense, though cuts 13 and 14 were made with the knife-blade after it had been used to cut some of the infected bark to be inserted in cuts 15 and 16.

Cuts 3 and 4 were inoculated with pieces of the mycelium-covered shell of the nut after the pustules had been cut away; cuts 9 and 10 were inoculated with pieces of the shell to which pustules were still attached; and cuts 15 and 16 were inoculated with pieces of bark from a disease lesion on the bark of an American chestnut tree.

On July 22, 1913 (about ten and one half months after the inoculations were made), the inoculations and checks were reexamined and records made of their condition. Cuts 1 and 2 were uninfected. Cut 3 likewise was uninfected. Cut 4 had developed a characteristic lesion about 4 inches long. Cut 5 was sur-